QA Transactions and Reports

Monitoring Quality Assurance

Background



- The QA requirements for ambient air quality monitoring are specified in 40 CFR Part 58 Appendix A.
- In 2012 the EPA initiated a project to develop transactions that more closely matched the Appendix A requirements.
- In 2013, AQS was enhanced to support loading these, and a new set of reports were developed to utilize this data.
- AQS was configured to convert Precision and Accuracy data to the new QA data tables.

New Transaction List



- 1-Point QC
- Annual Performance Evaluation
- Flow Rate Verification
- Semi-Annual Flow Rate Audit
- Lead Analysis Audit
- Performance Evaluation Program (PEP)
- National Performance Audit Program (NPAP)
- PM Coarse Flow Rate Verification
- PM Coarse Semi-Annual Flow Rate Audit
- Speciation Flow Rate Verification
- Speciation Semi-Annual Flow Rate Audit
- NATTS Duplicate Assessment
- NATTS Replicate Assessment
- Field Proficiency Test
- Lab Proficiency Test
- Ozone SRP
- Ambient Air Protocol Gas Verification Program
- Definitions: http://www.epa.gov/ttn/airs/airsaqs/manuals/QA_Transaction_Formats.pdf

Example: 1-Point QC



- Regulatory Requirement: 40 CFR Part 58 Appendix A § 3.2.1
 - A one-point quality control (QC) check must be performed at least once every 2 weeks on each automated analyzer used to measure SO₂, NO₂, O₃ and CO.
 - The QC check is made by challenging the analyzer with a QC check gas of known concentration (effective concentration for open path analyzers) between 0.01 and 0.10 parts per million (ppm) for SO₂, NO₂, and O₃, and between 1 and 10 ppm for CO analyzers.
 - Report the audit concentration of the QC gas and the corresponding measured concentration indicated by the analyzer. The percent differences between these concentrations are used to assess the precision and bias of the monitoring data

Example: 1-Point QC (2)



No.	Field Name	Description
1	Transaction Type	New transaction type "QA"
2	Action Indicator	1 character code specifying Insert (I), Update (U) or Delete (D)
3	Assessment Type	A label specifying the assessment for which data is being submitted. "1-Point QC"
4	Performing Agency Code	Agency Code of organization performing assessment (optional)
5	State Code / Tribal Indicator	The FIPS state code of the monitor being assessed, or "TT" to indicate that the next field on the transaction is a Tribal code.
6	County Code / Tribal Code	The FIPS County Code of the monitor being assessed. If the previous field on the transaction contains "TT", then the Tribal Code of the monitor being assessed.
7	Site number	Four digit number to uniquely identify site in county.
8	Parameter Code	The AQS parameter code assigned to the monitor in AQS for which the assessment is being performed

No.	Field Name	Description
9	POC	Parameter Occurrence Code: One or two digit number identifying a specific monitor for a parameter at the site.
10	Assessment Date	Date that the assessment was performed
11	Assessment Number	A unique number associated with an assessment performed at a site on a given day. Value should be "1" unless additional same assessments are performed.
12	Monitor Method Code	The sampling methodology of the monitor being assessed.
13	Reported Unit	Units associated with the assessment concentrations (Monitor Concentration and Assessment Concentration)
14	Monitor Concentration	The concentration value provided by the monitor being assessed.
15	Assessment Concentration	The value of the check gas standard concentration.

Generating QA Transactions



Users have several options for entering QA data into AQS; these include the following:

- Entering the data directly into the AQS Web application Maintain forms.
- Creating the data manually using a text editor or other PC tool (e.g. Excel)
- Having a vendor's data management system create a file for submission to AQS.
- Using the AQS QA Transaction Generator program.

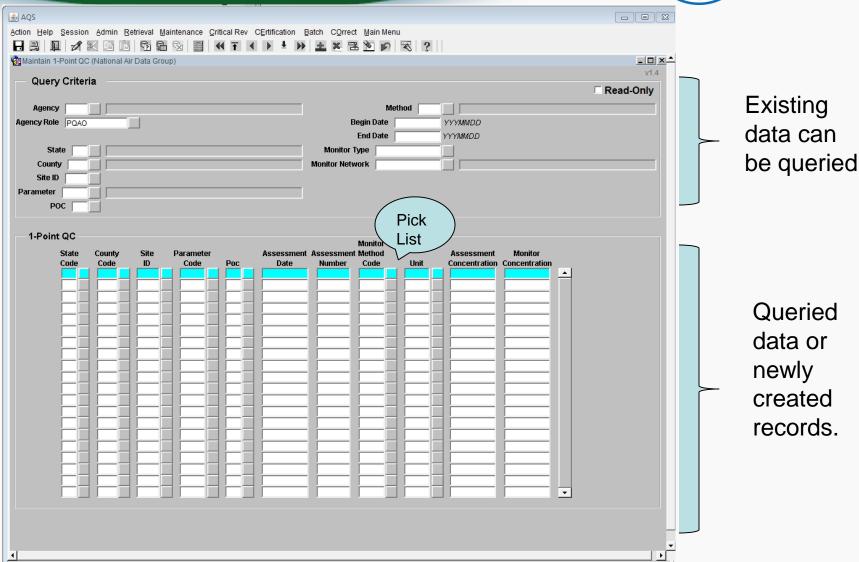
On-Line Maintain Forms (1)



- On-Line Maintain Forms
 - One for each QA transaction type
 - Can be used to edit (Insert, Update, or Delete)
 Production QA data
 - Each field is validated as it is entered.
 - AQS codes can be picked from list where appropriate
 - Record fully validated by SAVE process
 - Records immediately show up on QA reports without having to run AQS LOAD

Example QA Maintain Form





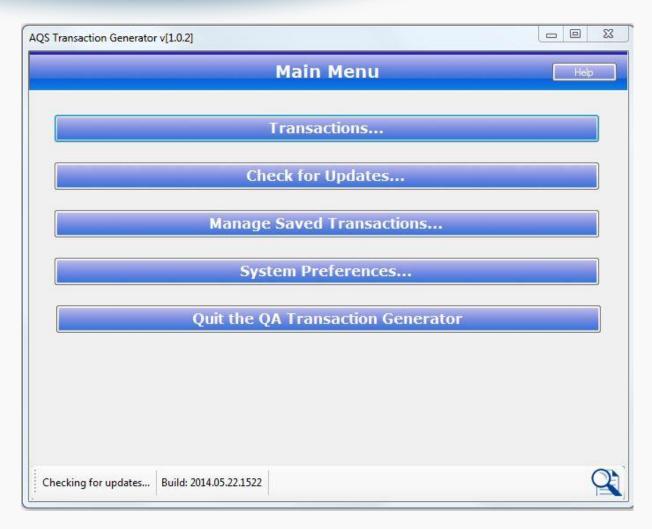
QA Transaction Generator (1)



- Tool to allow <u>off-line</u> creation of all QA transaction types.
- All fields and records validated as soon as they are entered.
- Has built-in capabilities to keep both software and AQS codes up-to-date
- Creates files that are submitted via the normal AQS Batch process.
- Can be downloaded from:
 http://www.epa.gov/ttn/airs/airsaqs/downloads.htm

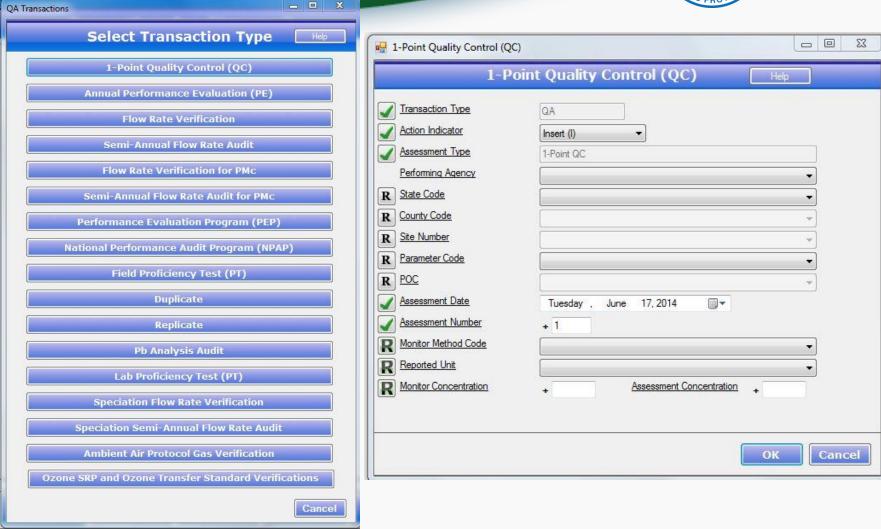
QA Transaction Generator (2)





QA Transaction Generator (3)





Input: QA Documents



- A Maintain form exists for each of the following types of QA Documents
 - Quality Management Plans
 - Quality Assurance Project Plans
 - Technical System Audits
 - Audits of Data Quality
- These can only be entered on-line and not via batch
- These can only be entered by EPA staff or Independent Auditors, but can be viewed by anyone
- Note: These forms only record the existence and dates for the documents, but do not support uploading the documents themselves.

Relationship to Legacy P&A



- All valid legacy Precision and Accuracy data has been converted to the corresponding QA data
- Legacy Precision (RP) and Accuracy (RA) transactions will continue to be accepted through March 2015
- Legacy RP and RA transactions converted to QA data as soon as loaded (Initially over night)
- Caveats:
 - Legacy NATTS Duplicate and Replicate assessments not separated from 1-Point-QC assessments
 - Any Legacy Field-PT assessments not separated from 1-Point-QC assessments

Outputs: QA Reports



- QA Raw Data Report (AMP251):
 - Produced formatted report of submitted transactions with Percent Difference for each value pair
 - Replaces:
 - AMP250: P&A Raw Data Report
 - AMP246: Precision Report
 - AMP247: Accuracy Report
- QA Data Quality Indicator Report (AMP256):
 - Calculates Part 58 Appendix A statistics
 - Replaces: AMP255 (with bug fixes)
 - Workfiles coming
- Extract QA Data (AMP504)
 - Allows retrieval of QA transactions as submitted
 - Replaces AMP502 Extract P&A Data

Access Control



Access is controlled by Agencies assigned to the monitor rather than by Screening Group

Monitoring Organization (monitor owner)	Full access to routine QA data & Monitor Metadata
PQAO (Pooled QA across monitors)	Full access to routine QA data
Reporting Organization	Full access to routine QA data
Collecting Agency	No access to QA data
Analyzing Agency	No access to QA data
Audit Agency	Full access to <i>Independent</i> QA data (i.e. PEP & NPAP)
EPA Staff	 Read access to data for review Full access to <u>Independent</u> QA data

Example Reports



- AMP251 QA Raw Data Report
- AMP256 QA Data Quality Indicator Report



Questions?